

REMARKS/ARGUMENTS

The Office Action has been carefully reviewed in light of the cited references and the Examiner's comments, and accordingly, applicants are replacing original independent claims 1, 6, 12-17, 20 and 35 with new independent claims 36, 41, 46-51 and 53 to distinguish applicants' invention more clearly and to place these claims and the claims dependent therefrom in condition for allowance with claims 18, 19 and 22-34, the allowance of which is hereby noted. Applicants are also filing with this response a Terminal Disclaimer which disclaims all that portion of any patent to issue on the present application subsequent to the expiration date of U.S. Patent No. 6,740,381. The '381 Patent has common inventors and a common assignee with the present application which is a continuation-in-part of the '381 Patent. In view of the Terminal Disclaimer, applicants submit that Day et al Patent No. 6,740,381 and its corresponding PCT application should be withdrawn as a reference.

Referring to new claim 36 which is directed to applicants' fiber reinforced core panel disclosed in connection with FIGS. 16 and 17 and paragraphs [0128] and [0129], a core panel comprises an elongated unitized strip (220) including a series of longitudinally arranged blocks (221) of low density cellular material, reinforcing members (222) separating adjacent blocks, a first layer (176) of continuous fibrous rovings with each of the fibrous rovings helically surrounding the strip and extending continuously along the entire length of the strip, a second layer (177) of continuous fibrous rovings with each of the fibrous rovings helically surrounding the first layer on the strip and extending continuously along the entire length of the strip, and the rovings in the second layer extending helically in an opposite direction and crossing the rovings in the first layer.

Applicants are thoroughly familiar with the disclosure of Tunis, III et al '972 (Tunis '972) which is discussed in applicants' "Background of the Invention" in paragraph [0008]. In each embodiment of Tunis '972, each individual core block is separately wrapped with reinforcement fabric in sheet or tubular form, and each

wrapped block is individually placed in a mold. In contrast, applicants' core panel, as set forth in new claims 36-52, comprises an elongated strip or strips each including a series of longitudinally arranged blocks with continuous fibrous rovings helically surrounding the strip along its entire length to form a unitized core panel which is transferred to the mold. Thus applicants' invention substantially increases the efficiency in filling the mold, as set forth in applicants' paragraph [0008]. There is no suggestion in Tunis '972 or in any of the other references of applicants' core panel structure as set forth above in new claim 36 and described in applicants' paragraphs [0128] and [0129]. Moreover, there is no suggestion of the additional structure of applicants' core panel as called for in new claims 37-40 which depend from claim 36.

New claim 41 is directed to applicants' fiber reinforced core panel (290) as disclosed in connection with FIGS. 24-26 and in paragraph [0138]. The core panel includes a plurality of elongated strips (261) each having a series of longitudinally arranged blocks (170) of low density cellular material, continuous fibrous rovings (176, 177) extending around each of the blocks and between adjacent blocks, at least one layer (281) of continuous fibrous rovings with each of the rovings helically surrounding each strip (261) and extending continuously along the entire length of the strip, and the elongated strips and helically surrounding rovings surrounding the strips (280) are connected together to form a unitized core panel (290) with the rovings over the core surfaces for receiving the skins and adapted to be moved as a preform unit to a molding process where the resin is hardened. Such a core panel is in no way suggested or taught by Tunis '972 or any of the other references. In addition, the references fail to teach the additional structure of applicants' core panel as called for in new claims 42-45 which depend from new claim 41.

New claim 46 is directed to applicants' fiber reinforced core panel (330) as disclosed in connection with FIG. 31 and described in paragraph [0145]. In this embodiment, a plurality of elongated adjacent strips (170) of low density foam plastics material each have opposite faces attached to corresponding facer sheets

(332) extending between the core surfaces adapted to be attached to corresponding skins, a first layer of continuous fibrous rovings (176) with each of the fibrous rovings helically surrounding at least two adjacent strips and extending continuously along the entire length of the adjacent strips, a second layer of continuous fibrous rovings (177) with each of the rovings helically surrounding the first layer of rovings and extending continuously along the entire length of the adjacent strips, the rovings in the second layer crossing the rovings in the first layer, and the elongated strips and the helically surrounding rovings being connected together to form a unitized core panel (330) with the rovings extending over the core surfaces for receiving the skins and adapted to be moved as a preform unit to a molding process where the resin is hardened. This core panel structure is also neither suggested nor taught by Tunis '972 or any of the other references.

With respect to new claim 47, applicants' fiber reinforced core panel embodiment is disclosed in connection with FIG. 32 and paragraph [0146]. This core panel includes a plurality of elongated parallel adjacent strips (170) of low density cellular material, a first layer of continuous fibrous rovings with each of the fibrous rovings helically surrounding spaced strips (178) and extending continuously along the entire length of each of said spaced strips, a second layer of continuous fibrous rovings with each of the fibrous rovings helically surrounding the first layer on said spaced strips (178) along the entire length of each of said spaced strips with the rovings in the second layer crossing over the rovings in the first layer, and the elongated strips (170 & 178) being connected together to form a unitized core panel (340) with the rovings extending over the core surfaces on the parallel spaced strips (178) for receiving the skins and adapted to be moved as a preform unit to a molding process where the resin is hardened. As applicants describe, increasing the weight of reinforcing rovings wound on the strips 178 produces a core panel having substantially the same structural properties as a core panel wherein each adjacent strip is wound, and substantially fewer strips need to be wound. The

references also fail to either disclose or suggest this core panel as called for in new claim 47.

New claim 48 is directed to applicants' fiber reinforced core panel as disclosed in connection with FIG. 34 and paragraph [0149]. This core panel (360) includes a plurality of elongated strips (170) of low density cellular material, at least one layer of continuous fibrous rovings (176) with each of the fibrous rovings helically surrounding each of the strips and extending continuously along the entire length of the strip, the elongated strips (178) and the helically surrounding rovings being connected together with adjacent strips separated by spacer strips (362) extending longitudinally the entire length of the elongated strips between opposite core surfaces of the core panel, and all of the elongated strips and the helically wound rovings being connected together to form a unitized core panel (360) with the rovings extending over the core surfaces for receiving the skins and adapted to be moved as a preform unit to a molding process where the resin is hardened. For reasons mentioned above, neither Tunis '972 nor any of the other references suggest this unitized structure of applicants' core panel or suggest the inclusion of spacer strips as a structural improvement.

With respect to new claim 49, applicants' fiber reinforced core panel is disclosed in connection with FIG. 36 and paragraph [0153]. This core panel (380) includes a plurality of elongated hollow tubes (381), at least one layer of fibrous rovings (176) with each of the fibrous rovings helically surrounding each of the tubes and extending continuously along the entire length of the tube, and the elongated tubes and helically surrounding rovings being connected together to form a unitized core panel with the rovings extending over the core surfaces for receiving the skins and adapted to be moved as a preform unit to a molding process where the resin is hardened. Applicants are unable to find any disclosure or suggestion in Chapman, Jr. '633 of their core panel as set forth above in new claim 49. The thin-wall tubes disclosed in this reference are formed by wrapping rovings around mandrels which are subsequently removed. On the other hand, applicants' hollow

tubes cooperate with the helically surrounding rovings to form an integral part of the reinforced core panel. Furthermore, neither Chapman '633 nor any of the other references suggests connecting the elongated tubes with their helically surrounding rovings together to form a unitized core panel (380) which is adapted to be moved as a preform unit to a molding process.

New claim 50 is directed to applicants' fiber reinforced core panel as disclosed in connection with FIGS. 20-23 and in paragraphs [0134] - [0136]. In this embodiment, applicants' core panel (270) comprises a plurality of elongated strips (261) each including a plurality of connected blocks (178) of low density cellular material and having at least one layer of fibrous rovings (176) helically extending around each of the blocks, the elongated strips (261) being connected together to form a unitized core panel (270) with end portions (262) of the rovings terminating at the opposite core surfaces of the core panel for connecting to the skins, and the connected blocks and connected strips providing for moving the core panel as a preform unit to a molding process. For the reasons set forth above, applicants find nothing in Tunis '972 or in any of the other references either suggesting or teaching this core panel structure.

New claim 51 is directed to applicants' fiber reinforced core panel disclosed in reference to FIG. 33 and paragraph [0148]. In this embodiment, applicants' core panel includes a plurality of elongated strips (170) of low density cellular material, each of the strips having a portion of reduced thickness, generally parallel continuous fibrous rovings (180) extending longitudinally along each of the strips and over the portions of reduced thickness, at least one layer of continuous fibrous rovings (176) helically surrounding each of the strips and the longitudinally extending rovings and over the portion of reduced thickness, the layer of rovings extending continuously along the entire length of each strip, and the elongated strips and helically surrounding rovings being connected together to form a unitized core panel with the rovings extending over the core surfaces for receiving the skins and adapted to be moved as a preform unit to a molding process. The references,

Appl. No. 10/810,298

including Landi et al '567 also fail to suggest or teach a core panel having this structure of new claim 51.

New claim 53 replaces previously submitted claim 35 and is directed to the reinforce composite panel disclosed in connection with FIG. 40 and in paragraphs [0158] and [0159]. This composite panel (420) includes a core panel (170) of low density cellular material and having opposite core surfaces, fibrous reinforcing members (260) extending between the core surfaces, fibrous skins (421 & 422) adjacent the core surfaces of the core panel, a hardened thermoset resin extending through the fibrous reinforcing members and through only an inner portion of at least one of the skins, and a thermoplastic resin extending through only an outer portion (423) of the one skin. Applicants find nothing in Tunis '972 or in any of the other references suggesting a reinforced composite panel including the above structure and which offers the desirable advantages set forth in paragraphs [0158] and [0159].

In view of the foregoing, applicants respectfully submit that each of new independent claims 36, 41, 46-51 and 53 and the claims dependent therefrom defines a fiber reinforced core panel which is clearly distinguished from the references. Accordingly, applicants believe that these claims are in condition for allowance with the claims 18, 19 and 22-34, and respectfully request that this application be passed to issue.

Respectfully submitted,

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